

Washington Park Arboretum

BULLETIN



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— Washington Park Arboretum —

The Arboretum is a 230-acre dynamic collection of trees, displaying internationally renowned collections of oaks, conifers, camellias, Japanese maples, hollies and a profusion of woody plants from the Pacific Northwest and around the world. Aesthetic enjoyment gracefully co-exists with science in this spectacular urban green space on the shores of Lake Washington. Visitors come to learn, explore, relax or reflect in Seattle's largest public garden.

The Washington Park Arboretum is managed cooperatively by the University of Washington and Seattle Parks and Recreation; the Arboretum Foundation is its major support organization.

— Graham Visitors Center —

Open 10 AM—4 PM daily;
holidays, NOON—4 PM.

Closed University of Washington holidays.

The Arboretum is accessible by Metro Transit buses #11, #43 and #48. For more information: www.transit.metrokc.gov

— Arboretum Foundation —

The Arboretum Foundation is a nonprofit organization established in 1935 to assure the continued existence and flourishing of Washington Park Arboretum. The Foundation provides funding, volunteer services, membership programs and public information in support of the Arboretum, its plant collections and programs. Volunteers operate the gift shop, conduct major fund-raising events, and further their gardening knowledge through study groups and hands-on work in the greenhouse or on the grounds.

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The City of Seattle owns most of the Arboretum's land and buildings. Seattle Parks and Recreation is responsible for park functions throughout the Arboretum and manages and operates the Japanese Garden.

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ABOVE: The Pacific dogwood, *Cornus nuttallii*, blooms in spring from Northern California to British Columbia and as far west as Idaho. Its red fruit and reddish-pink fall color make coming upon healthy wild specimens a hiker's treat, either in spring or fall. Unfortunately, this native dogwood is susceptible to dogwood anthracnose, a non-native fungal disease that has killed many trees. To see healthy plants in the Arboretum visit grid locations 3-5E and 6-4E.

ON THE COVER: The creamy-white blooms of *Magnolia sieboldii* face downward, the petals surrounding chocolate- to rose-red stamens. Flowering in May and June, this 10- to 20-foot small tree enjoys fertile, moist, well-drained soil. In fall, golden-yellow leaves contrast with red fruit. Native to southeastern China, Korea and Japan, and selected as a Great Plant Pick, *M. sieboldii* may be seen at Arboretum grid locations 27-3E, 27-4E and 28-3E.

Stewardship

*M*uch has been made of stewardship of Washington Park Arboretum. All three partners involved in the Arboretum's governance claim to be its stewards in their mission statements and elsewhere, yet stewardship has been an overused term for several years.

"The Merriam-Webster Dictionary" defines stewardship as follows:

1: the office, duties, and obligations of a steward;

2: the conducting, supervising, or managing of something; especially: the careful and responsible management of something entrusted to one's care <stewardship of our natural resources>

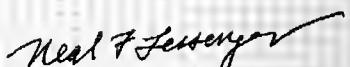
If stewardship is roughly equated with supervision or management, then the stewardship of Washington Park Arboretum rests squarely with the University of Washington. The 1934 agreement between the University

and the City of Seattle entrusted the care of the Washington Park Arboretum to the University, and the University has been responsible for its management ever since then. The City has been responsible for the management of Washington Park, including all of the park elements (e.g., lawns, roads and pathways) of the Arboretum. A 1974 modification of the 1934 agreement did not change the City's and the University's roles, but it did provide that the costs of operating the Arboretum would be shared equally.

Then what is the role of the Arboretum Foundation? The 1934 agreement called for the formation of a foundation to provide funds for the management of the Arboretum and for the collection of trees, shrubs and seeds. The Foundation was incorporated the following year to do just those things and to be a source of volunteers and advocates for the Arboretum.

Today, the Arboretum Foundation is conducting a strategic planning exercise. While that work is not yet complete, it is apparent that the Foundation's role will continue to be one of building community support for the Arboretum, advocating and promoting the Arboretum, and providing private funding for Arboretum programs the Foundation wishes to foster, until such time as the managing partners fund those programs themselves.

I suggest that instead of providing stewardship, the Arboretum Foundation is assuring the continued existence and flourishing of Washington Park Arboretum. ~



Neal T. Lester
Interim Executive Director,
Arboretum Foundation

COURTESY OF THE RHODODENDRON SPECIES BOTANICAL GARDEN



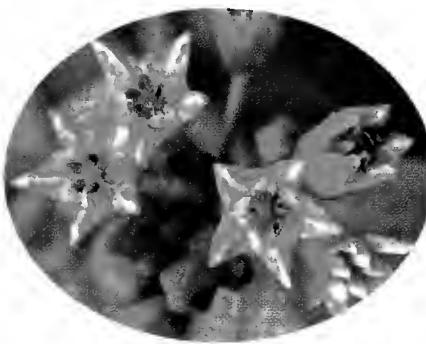
The largest collection of *Rhododendron occidentale* selections in the world, the Smith-Mossman Western Azalea Garden, includes this beauty, known as SM502 'Humboldt Picotee,' and is located in the Lake Wilderness Arboretum in Maple Valley, Washington. To learn more, see the article beginning on page 13.



Cascara: *Frangula purshiana*

BY WALT BUBELIS

*W*hat is there not to like about this tree? It has kept families from desperate measures, has been



used in practical jokes, is a native source of food for wildlife, is basically pest free and, to top it all off, has beautiful fall color.

ABOVE: The bright green leaves of *Frangula purshiana* (syn. *Rhamnus purshiana*) show off the small dusty-yellow flowers that bloom from April through June. **INSET:** A close-up view of a cascara (*F. purshiana*) flower cluster. Cascara shrubs can be found among the Arboretum's plantings of Northwest natives.

The remarkable plant with all of these characteristics is none other than our cascara, *Frangula purshiana* (syn. *Rhamnus purshiana*). A variation on its common name, cascara sagrada or “sacred bark,” refers to its use as a laxative. During the Great Depression, harvesting the bark kept many a family from falling into debt, although so much harvesting occurred during this time that the plant disappeared from many areas. Once the bark was stripped from a limb or trunk, that portion of the plant would die. Less desperate harvesters would not girdle the main trunk, leaving a strip of bark to continue life processes and perhaps regenerate new bark. Harvested bark, either fresh or dried, was sold to wholesalers, who then passed the aged bark on to pharmaceutical or herbal firms.

Luckily for the distribution of cascara, birds relish the juicy fruits—pea-sized black berries—and spread them around the surrounding forest. Cascara also has the ability to sprout from a cut stump.

Oh! Wondering about the practical joke? At the college where I did my undergraduate studies, a chap regularly received shipments of cookies from home. These he shared with his friends. If he didn't get to his mail promptly, however, he would find his cookie package pre-opened and rifled. To determine the culprit, he asked his mother to send him a specially marked box that would have cascara powder mixed into the cookie dough. Needless to say, the culprit wisely avoided cookie shipments after that. One last warning: Do not use a cascara branch to toast marshmallows on a picnic!

Northern California Indians introduced the use of cascara to early 16th century Spanish explorers. Other tribes, ranging from the Pacific Coast to the Kootenai and Flathead of western



The author's cat, Mr. Parker, seems less interested in admiring the trunks of *Frangula purshiana* than in exploring other sections of the Babelis garden.

Montana used it as a laxative, consuming it as a tea brewed from the bark. Although the Food and Drug Administration has removed cascara from both non-prescription and prescription use in the United States, it is still sometimes used as a dietary supplement.

Frangula purshiana: Range and Growth Habit

Cascara is found from southern British Columbia to western Montana and Idaho, and south through the Cascades into central California, ranging from sea level to 6,000 feet in altitude. With this wide distribution, it should come as no surprise to find it in a number of diverse habitats including canyons, bottom-lands and lower mountain slopes. Other wildlife will browse it, but only coastal deer seem to find it truly palatable, limiting its use as a landscape plant in some coastal areas.

Cascara prefers moist soils but is so tolerant of drier sites that it can be characterized as a competitive colonizer in some areas. It associates as easily with floodplain species as it does



The shades of gray mottling on the bark of cascara sagrada give it an interesting snake-bark effect.

with coniferous plants and dry-land plantings such as chaparral. Although shade tolerant cascara's fall coloration can be—if given a sunny location—a gorgeous butter-yellow that literally glows. Big-leaf (or Oregon) maple (*Acer macrophyllum*) is its only competitor.

Cascara averages 30 feet in height, with exceptional specimens reaching 70 feet. Although it normally grows vertically, it can be found leaning at odd angles when grown in excessive shade, since weaker stems are more pliable. In shade, it often stays evergreen. With four- to six-inch, smooth-margined, oval-shaped leaves and small clusters of flowers, it doesn't stand out amongst its native companions unless isolated or in fall color.

Once established, cascara has few pests other than occasional leaf beetles. In California and Oregon, it has been recorded as a host for the pathogen *Phytophthora ramorum*, misleadingly called "sudden oak death." The impact that serving as a host for this disease is having on native stands of cascara is being monitored.

Gifts to the Gardener

Cascara is available at a number of nurseries carrying native plants. Youngsters are easy to transplant. I have successfully moved bare-root specimens up to six feet tall. Gathering seed in late summer and sowing them, without their pulp, one inch deep, before winter, is another successful propagation method.

As a member of the buckthorn family, Rhamnaceae, cascara shares a valuable trait that allows it to establish itself in barren soils: It produces nitrogen-forming nodules on its roots. Dig up a few root tips, and you will observe clusters of small tan to yellow, bacteria-laden nodules that absorb atmospheric nitrogen and convert it to a solid form, such as amino acids—the building blocks of proteins—which the host plant can use. Only when the host plant is dead

will the nitrogen become available to its neighbors. Pioneer species with this nitrogen-fixing talent thus have a leg up on the competition. (Also in this family of plants with root nodules, *Ceanothus* species are quite common in Northwest gardens.)

One last note concerning cascara's landscape value: Its bark is much underappreciated. Young tree trunks up to five inches in diameter exhibit a series of light-colored diamonds against the otherwise smooth, gray bark—a snake-bark effect that is quite striking. Cascara is not a *prima donna* in the plant world, but it does serve well in a number of supporting roles: providing food for wildlife, supplying nitrogen for the soil and offering quiet beauty. ~

WALT BABELIS has taught horticulture at Edmonds Community College for 38 years.

Things I Learned from Dr. Shigo

BY CASS TURNBULL

DRAWINGS BY KATE ALLEN

On October 6, 2006, a great man, Dr. Alex L. Shigo—who was born in Pennsylvania on May 8, 1930—died of a head injury suffered in a fall at his summer home. News of Dr. Shigo's accident spread quickly through the arboricultural community here and abroad. And, like many others, I was personally stunned and saddened by the news. Since then, I have been surprised to realize how many horticulturists are unaware of his groundbreaking work. Shigo was described as the “Sir Isaac Newton of Trees.” I find that an apt description.

From Shigo, I gained an understanding of how trees deal with injury and decay; how they are engineered—which is to say, how a branch is attached to the trunk; and where trees’ roots really are and what they need.

I attended many of Shigo’s workshops and lectures over the past twenty-three years—the first when I worked as a grounds maintenance person at Seattle Parks and Recreation, long before I knew I had a special relationship with trees, and years before PlantAmnesty. It was a free class, and I thought, “What the heck? I like to learn.” I couldn’t understand much of

PHOTO BY CHRISTINA PEEFFER



Alex Shigo, the “Sir Isaac Newton of Trees,” mesmerizes a class of eager students.

what Shigo said, but I could tell I was in the presence of greatness. Shigo had a bad habit of assuming a certain base level of knowledge in his audience. Of course, even this base level did not exist in my case. He kept talking about “compartmentalization of decay in trees” or the CODIT model for short. I kept wondering why anybody would care. After the big storm this winter, I daresay more people do!

Avoiding Failure: Good Medicine for Trees

The background for all discussion of trees is that they are a long-term proposition, so we need to manage trees for their long haul and for our safety. This puts trees in the same class as bridges and skyscrapers. We are interested in preventing and assessing the decay (or rot) in trees, because trees with massively rotten trunks break (trunk failure), and trees with root rots (common in the Northwest) blow over (tree failure). The third common classification of tree “failure,” as it is called, is a broken or shed branch. When arborists do “risk assessments” of trees, they look at the most likely point of failure (trunk, entire tree, branch), the weight of the part that will fail, and the relative absence or presence of a target. A tree that will fall in the woods poses almost no risk, since it will not strike anything valuable. A road, a parking lot or a backyard have a medium target rating, because, at any given moment, a person may or may not be there. A permanent structure, like a house, rates highest, because it is always in harm’s way.

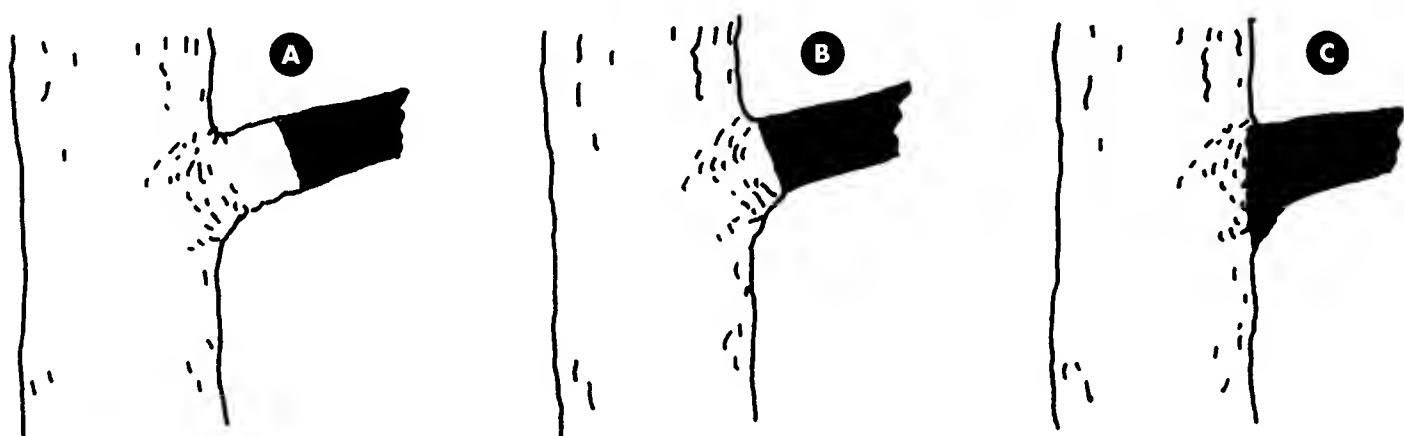
There is no modern medicine for trees. We now have access to a few new diagnostic tools—some imperfect x-ray machines for trunks and some root excavation devices (air-spades)—but we have no “miracle cures,” no tree penicillin. Medicine for trees remains as it was for humans in the 19th century, mostly preventive: stay healthy and avoid injury. Decay enters a tree after an injury, like gangrene after a war wound. Once a tree is injured, it will react chemically, trying to “wall-

off” the infected area and outgrow the injury. This reaction, known as “compartmentalization,” follows known patterns in trees.

Compartmentalizing Injury

As a Shigo devotee, I now have a more accurate picture in my mind of what the inside of a tree trunk looks like. Instead of pockets of rot, I see columns. People who have attended Shigo’s lectures and read his textbooks also see the history of a tree’s wounds when they look at your wooden coffee table. In the CODIT model, we find that decay is confined to the “wood present at the time of wounding.” When you see a hollow tree, the hollow is the exact size the tree was when it was topped or otherwise damaged. The sound wood—indicated by the rings of the tree that grew after the injury—is safe and sound. This is one reason a young tree can withstand a lot of injury, and an old tree, very little. A topped 10-year-old tree might be expected to rot entirely to the ground in the next five years, but, in reality, it will quickly add new rings of sound wood and will be as strong as a thick-walled pipe. By the time the tree is old, the slender rotten core will be a relatively small part of the tree trunk. But if a 50-year-old tree is topped, it will develop a relatively large internal decay column surrounded by a thin outer ring of new sound wood.

The “take-home messages,” as Shigo called them, are as follows: All pruning wounds trees. Trees do not “heal” like animals. They “compartmentalize” their injuries. Trees wall off the damaged area with chemically altered wood and outgrow the injury. Pruning the right way, by making removal cuts to the collar (where the branch joins the trunk or a larger branch) in the right amount (not too big, not too many, and less on old trees), minimizes the damage and maximizes the safety, health and longevity of trees. Pruning paints and “wound dressings” don’t work. Trunk injuries are the worst. Branch injuries



WHERE TO CUT: A. Stub cut (too far) B. Collar cut (just right) C. Flush cut (too close).

are the easiest to compartmentalize. But avoid all unnecessary wounds to the trunk, the limbs and the main roots of trees. When a cavity is seen in a tree, do not carve back into live wood and fill it, as was once commonly done. That breaks a "wall," sending in a new invasion of rotting organisms. Similarly, we no longer drill to drain water out of cavity, as that wounds previously protected wood.

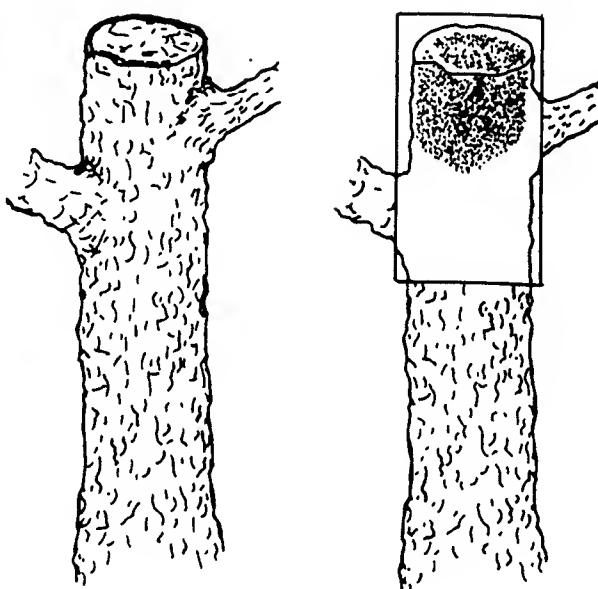
Trunks & Branches: Laminated Layering

"Trunk wood is different from branch wood," were words Shigo repeated again and again. He explained how branches are attached to the trunk and why they are so strong.

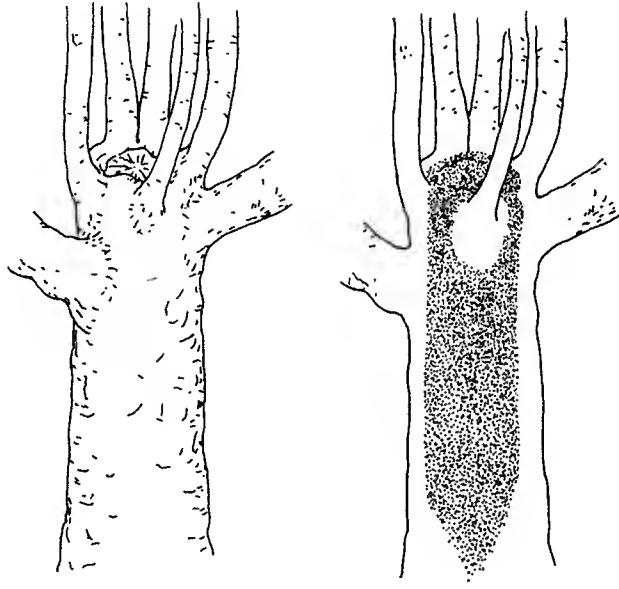
Engineers had long been amazed by the ability of a tree's limbs to withstand wind stresses and snow loads. I once saw a photo of a very large tree that withstood the Hiroshima blast. It was leafless but still standing when everything else in sight was rubble. When the stress is too great for a limb, or when it is damaged, the tree sheds the limb without the rest of the trunk being affected.

When illustrating how a tree limb is attached to the trunk, Shigo described a process somewhat like lamination. A limb is made up of wood different from that of the trunk. The only part where the wood is "co-owned" is a small tag at the underside of the branch. This

Pattern of decay after a topping cut.



Topped tree five years later.



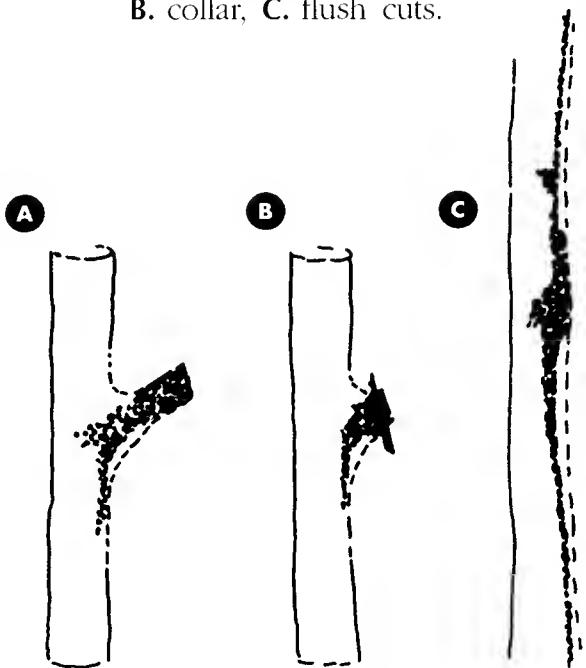
BOOKS BY ALEX L. SHIGO

Readers interested reading books written by Dr. Shigo might look for the following books at local libraries, booksellers or on-line: "A New Tree Biology Dictionary: Terms, Topics, and Treatments for Trees and Their Problems and Proper Care" (1989); "Modern Arboriculture: A Systems Approach to the Care of Trees and Their Associates" (1991); and "100 Tree Myths" (1993).

is all very hard to visualize but was best described to me when explained as follows: In the spring the branch wakes up first and puts on a layer of new wood—this year's ring. Then the trunk wakes up and puts on a layer of trunk wood. Where the two meet, at the base of the branch, one finds a layer of trunk wood, overlapping a layer of branch wood, in succession. The bulge of alternate layers of wood is called the branch collar. The branch is actually embedded in the trunk, back to where it began as a bud, but it is not made up of the same wood.

When you see a knothole drop out of a piece of lumber, that is part of a branch. Thus,

Patterns of decay from A. stub,
B. collar, C. flush cuts.



The advertisement features a large, stylized banner graphic with the text "florAbundance" running diagonally across it. The word "florAbundance" is written in a flowing, cursive font. To the left of the banner is a small illustration of a flower. To the right of the banner, the text "The Arboretum Foundation's" is written vertically. To the right of the banner, a list of plant categories is displayed in a column: Perennials, Annuals, Grasses, Shrubs, Herbs, Ferns, and more. Below the banner, there is a vertical line with the text "SPRING PLANT SALE" written along it. To the left of the banner, event details are listed:
Saturday, April 28
10 AM — 5 PM
Sunday, April 29
10 AM — 3 PM
Member Pre-Sale & Party
Friday, April 27

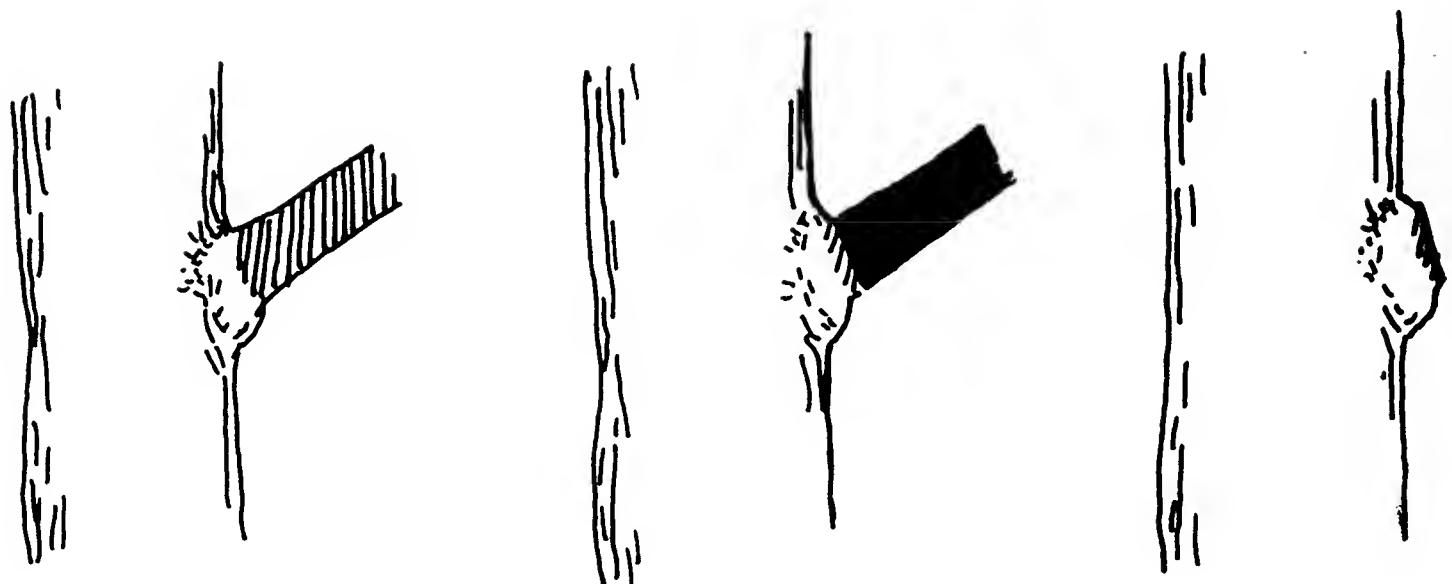
Warren G. Magnuson Park
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www.arboretumfoundation.org

Dozens of Nurseries & Vendors!

The advertisement features a dark background with white text. At the top, it says "April 14". Below that, in a larger, stylized font, it says "Early Bloomers". To the right of the text is a small illustration of a flowering branch. Below "Early Bloomers", it says "PLANT SALE". At the bottom, it says "10 AM — 2 PM" and "Graham Visitors Center".



Branches die back naturally to the collar. The collar is usually obvious as a bulge.

we all learned from Shigo to cut to the collar, but not into it, as that would wound the trunk, allowing an entirely different column of decay to develop. Alternatively, cutting too far away from the collar, leaving a stub of deadwood, is also bad. The stub acts like a “stick of sugar,” defenseless food that attracts rot-organisms to the tree. So “flush cuts” are out; “stub cuts” are also bad, and “collar cuts” are in. The horticulturally correct gardener will spend a fair amount of time and energy reading about collar cuts—learning how to make proper cuts and learning where the collar is, exactly, on trees where it is not obvious.

To Avoid Limb Failure, Prune Properly

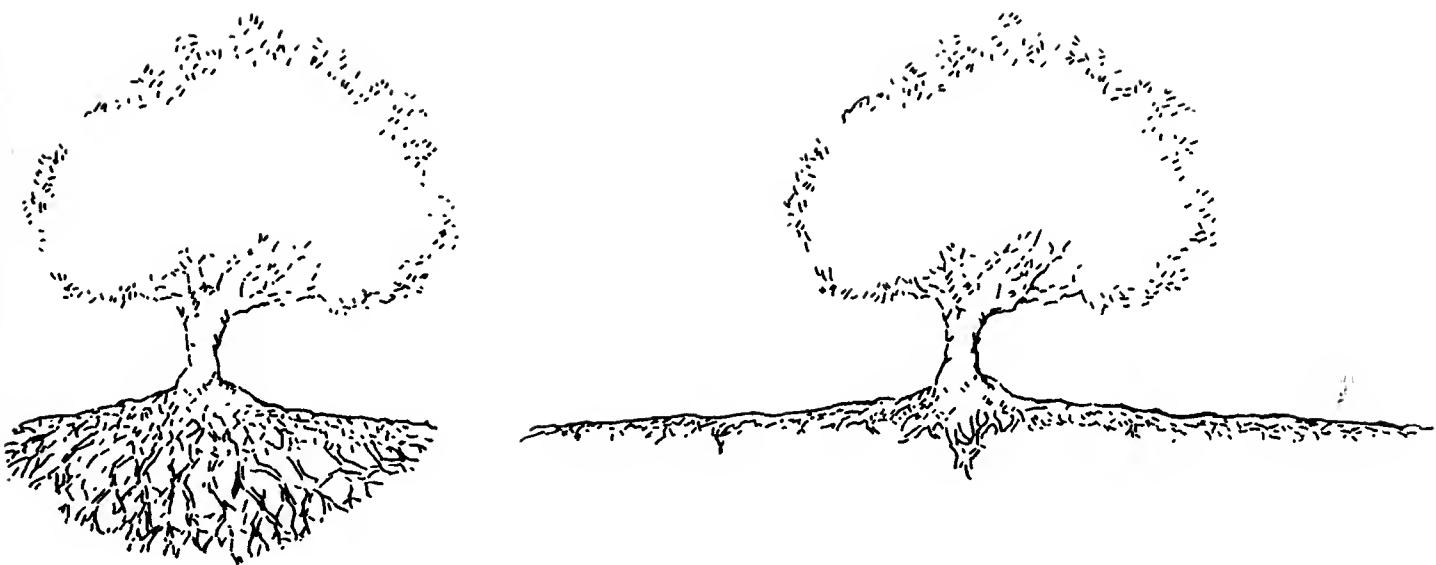
An interesting bit of news from Shigo is that most of the damage to property and people that is caused by trees comes from limb failure, not from the blow-down during windstorms, as is commonly supposed. And limb failure is often caused by improper pruning, including flush cuts and tree topping cuts. A branch that re-grows after a topping cut does not have the physical integrity of the original limb that was embedded in place with many layers of sound wood. The new limb growing from a topping cut is sort of scabbed on the outside and is often attached to an adjacent pocket of rot in the trunk. Take home

messages: topping and heading cuts are the most difficult cuts for trees to compartmentalize; a new branch grown after topping is apt to be weakly attached, even many years later when it is larger and heavier; and removing a limb by cutting to the branch collar minimizes the damage to trees.

Where Are the Roots?

Dr. Shigo also cautioned, “Tree roots aren’t where you think they are.” Most of us have an inaccurate picture in our heads of where a tree’s roots are. Some believe that trees are held up by a long taproot, one that looks sort of like a carrot; or, equally inaccurate, we believe that a tree’s roots look like a mirror image of the crown—the entire above and below ground portrait resembling a barbell. That misinformation has been copied from one text to the next over the course of decades and sometimes even centuries. Shigo liked to trace back the origins of such misinformation. He showed us how it is reinforced by a hundred logos and product labels, such as those on fertilizer bags.

Tree roots come in an amazing variety of sizes and configurations, including some very strange ones growing in the tropics. But, on average, they are relatively shallow and stretch far beyond the drip line of trees. The more



ROOTS: What we think (left), reality (right).

accurate mental image of a tree, above and below the ground, is that of a goblet sitting on a plate. Most of the average tree's roots are in the top three feet of soil and, of those, the fine, absorbing roots are in the top few inches. Some tap roots and some "sinker roots" exist, but a tree is held up mostly by the weight of soil it holds in the entire labyrinth of its roots, like a floor lamp that is held up by a heavy base.

Where Tree Roots Will Grow

Before becoming a Shigo student, I also wrongly pictured tree roots radiating evenly from the trunk, like spokes on a wheel. They actually vary greatly and spread out unevenly, according to whether or not they find what they need. An old saying of arborists is, "Tree roots go where tree roots will grow." And what roots want is air, not water, as I had assumed. Water, it turns out, travels laterally, not just straight down. But cut off the air supply by compacting the top three inches (by filling with soil, flooding, or covering it with concrete), and the tree will slowly suffocate. Even the structural roots are nearer the surface than generally imagined and are thus frequently severed by construction workers digging foundations or burying cables and pipes. They have a different picture in their heads of where

the tree roots are—the wrong picture. Enlightened construction techniques tunnel under tree roots when nearing what is called "the critical root zone," the area which must be guarded if the tree is to survive nearby construction. Root damage from construction, like a war wound, sets trees up for the many root rots common in our area. And it is root rots that cause many a tree to blow over in the storms that seem to plague us with greater and greater frequency. After a storm I am apt to pull over to investigate a toppled tree on the side of the road. I feel its upturned base for mushy roots, check the trunk (and the originating wound) for decay and look for the presence of a large girdling root.

Of course, all of this is realized after the tree has failed and after Shigo has shown how that failure might have been prevented. ~

CASS TURNBULL is the founder and spokesperson for PlantAmnesty, a Seattle-based nonprofit organization that endeavors to promote respect for plants and to educate the public about proper pruning techniques. Further information is available at plantamnesty.org. She is the author of "Cass Turnbull's Guide to Pruning" (2nd edition, Sasquatch Press).



PHOTOS COURTESY OF THE RHODODENDRON SPECIES BOTANICAL GARDEN



TOP LEFT: The brilliant fall color of the foliage of *Rhododendron occidentale* growing wild in the Siskiyou Mountains. Here it is seen with the hooded flowers of *Darlingtonia californica*, the West Coast's native pitcher plant. **TOP RIGHT:** The remarkable blossom color of SM 232 'Leonard Frisbie,' named for the man who inspired Britt Smith's and Frank Mossman's work.

BETWEEN: SM 157 'Miniskirt' with its red, protruding stamens and styles.

Britt Smith & Frank Mossman

ON THE TRAIL OF THE WESTERN AZALEA

BY RICHIE STEFFEN AND RICK PETERSON

*T*here are seldom times when someone gets the chance to "define" a plant in horticulture. The level of commitment must be high, and the will to overcome any obstacle, great. Fortunately, our region seems to draw such individuals and inspire them to go beyond the ordinary.

Britt Smith and Frank Mossman are two such men, and their passion is to better understand our West Coast native deciduous azalea, *Rhododendron occidentale*. They were inspired by the exhaustive work of Leonard Frisbie, a nurseryman from Tacoma, Washington, who compiled over 10 years of research on the western azalea in the 1950s. Frisbie's work represented the first serious study of this azalea since the species was first collected more



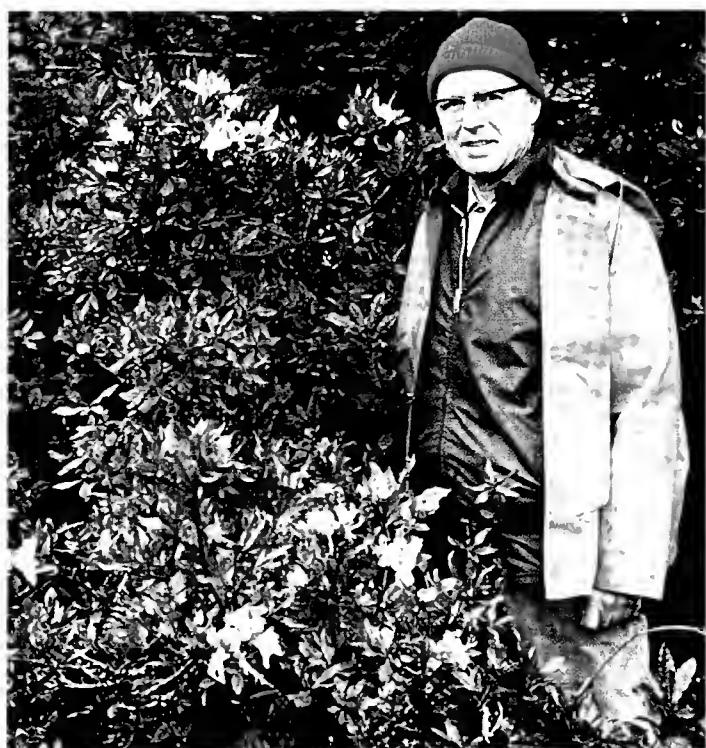
The "freak" SM 53 with ribbon-like foliage.

than 90 years earlier. Smith and Mossman took up Frisbie's work and strove to show the full range of diversity within this species. The two men started their journey in 1966, and over the next 15 years discovered and documented over 200 unique and interesting forms of the western azalea

along the southern coast of Oregon and Northern California.

Rhododendron occidentale: Showiest of Shrubs

What was it about this plant that intrigued them? Its spectacular floral display played a major role in capturing their attention. *Rhododendron occidentale* is one of our showiest native West Coast shrubs. The flower corolla (the funnel-shaped bloom) is typically



Britt Smith



Frank Mossman

white or flushed pink and is covered with characteristically sticky glandular hairs. When fully open, the corolla has five lobes (petal-like divisions). Generally, the lobes are all white with the top lobe sporting an orange-yellow blotch. Flowers can be as large as four inches across, and they average two to three inches wide. Combine this with highly fragrant blooms, and it is easy to see why Smith and Mossman devoted so much time to this plant. This hardy azalea is an easy-to-grow species that thrives in our Northwest gardens. A relatively slow grower, it will reach four to five feet tall in 10 years with mature specimens becoming seven to eight feet tall with time. Old specimens in Azalea Park in Brookings, Oregon, are thought to be over 100 years old and are at least 15 to 20 feet tall. Once established, the western azalea will tolerate drought; however, the stress does make it prone to powdery mildew. Regular water during dry weather and a location with good, well-drained garden soil and full sun to partial shade will help to minimize this problem.

Smith and Mossman took great care with recording their findings, leaving quite detailed notes. Many of their selections can still be located in the wild by using the information found in their records. When an unusual form caught their attention, notes were taken on the location, bloom time and flower details, including color, size, number per truss and any unusual features. Each unique rhododendron received its own record number—most of these were Smith-Mossman numbers typically written as “SM#.” Out of this fantastic array of very desirable plants, only a handful were given cultivar names—with one of the most beautiful, SM#232, or *Rhododendron occidentale* ‘Leonard Frisbie,’ named after the person who inspired them.

Following is a brief summary of the scope of their work in Britt Smith’s own words:

“*Rhododendron occidentale* is thought to have been first reported in a publication by Sir

William Hooker in 1857, and he credits its discovery to a Mr. Gray. [AUTHORS’ NOTE: **Mr. Gray refers to Asa Gray who first described *R. occidentale*. An herbarium specimen of *R. occidentale* was most likely collected by George Tradescant Lay, the naturalist on the English sailing ship *Blossom*, under the command of Captain Frederick Beechy. The *Blossom* left England in 1825, returning in 1828.**] The first seeds were taken to England by Mr. William Lobb, who landed in San Francisco in the summer of 1849. The first *Rhododendron occidentale* bloomed in England in the garden of Mr. James Veitch of Exeter in 1857. It is likely that the great fragrance of the species was the reason for its first use in hybridizing. It was crossed with the ‘Ghent azaleas,’ and after much inbreeding produced the now well-known Knaphill and Exbury azaleas. Subsequent hybridizing continues in many places, combining and recombining *Rhododendron occidentale* with Knaphill- and Exbury-type azaleas, resulting in great beauty and often fragrance.

“In the United States, *Rhododendron occidentale* seems to have received little attention until 1952, when Mr. Leonard Frisbie began his monumental effort of investigating the species, regarding which he reported in the quarterly publication of the Pacific Rhododendron Society, *Rhododendron*. His was an effort of dedication with no monetary reward. There were years of research and inquiry in libraries, at universities, and in the field. He made many trips by public conveyance to hunt, inspect, select, and mark outstanding plants. There were winter trips with his friend, Dr. Charles S. Berry, to collect layers and plants.

“The January 1961 issue of *Rhododendron* and some of the plants collected by Mr. Frisbie had come to the attention of Dr. Frank Mossman of Vancouver, Washington, who then invited me [AUTHORS’ NOTE: **Britt Smith was from Kent, Washington.**] to join him in continuing Mr. Frisbie’s investigation. Let us now review some of the results of our investigations.

“We focused our attention to the area which

had been designated by Mr. Frisbie as being the most promising. That designation was correct, and the area soon became known by us as 'Occidentale Land.' Roughly, the boundaries are from Coos Bay to Roseburg to Grant's Pass to Klamath in Oregon, and on to Eureka in California, and the shoreline of the Pacific Ocean from Eureka to Coos Bay.

"Crescent City is a small town on a beautiful bay near the northwest corner of California,

and a very inviting place to pause. It soon became the hub of the investigations of *Rhododendron occidentale*, and 'home away from home' for Dr. Mossman and myself. In Crescent City, at the junction of two roads, there was a large pasture where many collections were made with the owner's permission. The plants are poisonous to grazing animals,

continues on page 33

Britt Smith and Frank Mossman could not ever agree on the 10 best selections they found but often mentioned in articles some of their personal favorites:

- **SM 28, SM 28-1, SM 28-2, SM 28-3**—This group represents a small population of double-flowered plants found growing in an area no more than 50 feet in diameter in a location called Le Munion's Pasture near Crescent City, California. Each selection bears 10 or more petals per flower. The best of the group, SM 28-2, was given the name 'Crescent City Double.'
- **SM 30 'Crescent City Gold'**—One of the best "yellows" found on their trips. Each lobe shows orange-yellow coloring. This selection later became a prominent parent in Britt Smith's *Rhododendron occidentale* breeding program effort to develop a true all-yellow flower.
- **SM 53**—Referred to in Britt Smith's writing as a "freak," it has deeply cut lobes to the base of the flower, giving a ribbon-like appearance to each petal.
- **SM 148**—One of the largest flowering forms found. Each bloom is about four inches across with a crease down the center of each lobe, giving a slight twist to each petal.
- **SM 157 'Miniskirt'**—One of the smallest flowers discovered, only about one-half inch across. The stamens and styles protrude far beyond the petals and look like long legs beneath a petal miniskirt.
- **SM 232 'Leonard Frisbie'**—Considered the best selection they found, *Rhododendron occidentale* 'Leonard Frisbie'—named for the man who inspired them to seek out *R. occidentale* in the wild—has large flowers with a highly frilled edge to each lobe and is heavily colored with pink and white.
- **SM 502 'Humboldt Picotee'**—The best picotee they found, but a very unstable plant. One plant can sport three different sorts of bloom: a spectacular, vivid red-edged picotee flower, a slightly larger bloom with a fine line of red on the edge of each bloom, or an almost typical flower. Branches sporting the best and most dramatic flowers will also have the deepest green foliage marked with dark chocolate-red specks. It is very slow and extremely difficult to propagate.
- **SM 601**—A very heavy-blooming selection; each of its trusses contains over 50 flowers.
- **'Stagecoach Frills' (no SM #)**—Large, white-flushed pink flowers open with a prominent orange-yellow flare on the upper lobe. Each lobe is highly frilled, producing a delicate and lacy appearance. Found near the top of a hill in the area known as Stagecoach Hill.



EPIMEDIUM



ABOVE: *Epimedium x perralchicum*, a hybrid of *E. perralderianum* and *E. pinnatum* ssp. *colchicum*, brings sunny life to dry shade, as do other epimedums derived from Mediterranean natives. **INSET:** *Epimedium grandiflorum* 'Dark Beauty' is one of the author's favorite epimedums for foliage interest.

AS: The Stars of the Spring Garden



STORY AND PHOTOS

BY RICHIE STEFFEN

The first epimedium I remember is likely the same one that almost every one first remembers. It had bright butter-yellow flowers in late winter or very early spring, soon followed by leathery dark evergreen foliage, and it likely grew in an older garden and was remarkably adapted to dry, shady locations. This reliable plant is well known to us but, oddly, is often sold under the wrong name. The plant I remember was almost certainly *Epimedium x perralchicum*, a hybrid of



Epimedium x warleyense, with sprightly orange flowers, is a tough, drought-tolerant ground cover.



Epimedium grandiflorum 'Queen Esta' is one of the author's favorites. It's two-toned lavender and white flowers show up beautifully against its dark purple new foliage. As early foliage turns green, new flushes of purple foliage continue, creating a long-lasting show.

E. perralderianum and *E. pinnatum* ssp. *colchicum*. But it is commonly sold as one of its parents and sometimes as a completely unrelated yellow-flowered species. It has always struck me as odd that a plant so well known in the garden is almost completely

unknown by its correct name. I guess this situation stems from the fact that we are only now gaining a wider understanding of this remarkable genus.

The primary recommendation of *Epimedium x perralchicum* is that it seems to

RICHIE STEFFEN'S EPIMEDIUM SHORT-LIST

- The best epimediums for flowers:

Epimedium brachyrrhizum

Epimedium epsteinii

Epimedium franchetii

Epimedium grandiflorum 'Lavender Lady'

Epimedium grandiflorum 'Orion'

Epimedium grandiflorum 'Purple Prince'

- The best epimediums for foliage:

Epimedium grandiflorum 'Dark Beauty'

Epimedium grandiflorum var. *bigoense*
‘Bandit’

Epimedium lishibchenii

Epimedium myrianthum 'Mottled Madness'

Epimedium x rubrum 'Sweetheart'
(drought tolerant)

Epimedium sempervirens 'Cherry Hearts'

- The best epimediums for all around garden use:

Epimedium 'Black Sea' (drought tolerant)

Epimedium grandiflorum 'Queen Esta'

Epimedium grandiflorum 'Tama-no-genpei'

Epimedium grandiflorum var.

thunbergiana 'Yubae' (also sold as
'Rose Queen')

Epimedium sempervirens 'Rose Dwarf'

Epimedium stellatum

Epimedium x versicolor 'Cherry Tart'
(drought tolerant)

Epimedium x versicolor 'Versicolor'
(drought tolerant)

Epimedium x warleyense (drought
tolerant)

thrive on neglect, but it is only one of several epimediums that have this reputation. These tough epimediums are all native to the Mediterranean or are hybrids strongly influenced by Mediterranean species. The Pacific Northwest climate—winter wet and summer dry, so similar to the Mediterranean—allows these plants to grow here with relative ease and little care. This group includes familiar plants, such as *E. alpinum*, *E. pubigerum*, *E. x rubrum* (a hybrid with *E. alpinum* as a parent), *E. x versicolor* (a hybrid between *E. grandiflorum* and *E. pinnatum* ssp. *colchicum*), and *E. x warleyense* (a hybrid of *E. alpinum* and *E. pinnatum* ssp. *colchicum*).

In the last decade or so, a flood of new species and selected clones—many originating in China—have arrived in the Northwest. When they first started to appear, there were rumors of flowers over two inches across (enormous for an epimedium) and plants that would grow to three feet tall! As these plants have been trialed, we have been met with both thrilling success and lackluster disappointment, but many of the old rumors did hold true. There are new, huge-flowered forms, far larger than anything seen before. Last year a rare species, *Epimedium latisepalum*, bloomed—with white flowers, two inches across—and its admirers quickly dubbed it the “dinner-plate-dahlia” of epimedums! Collectors, both in the United States and in Great Britain, have chosen a number of new selections and created interesting hybrids using these new Asian species.

Although these Asian species have added a fantastic new dimension to our gardens, they have one main drawback: They are native to areas with regular summer rainfall and will not tolerate our long dry summers without regular watering. The Elisabeth C. Miller Botanical Garden has been collecting various forms for many years and, as they have become established, has been evaluating their garden worthiness. In our observations, all epimedums prefer bright shade to half-day sun for the best flowers. Selections derived

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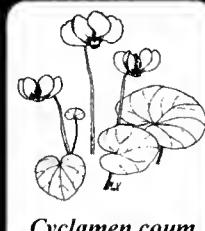
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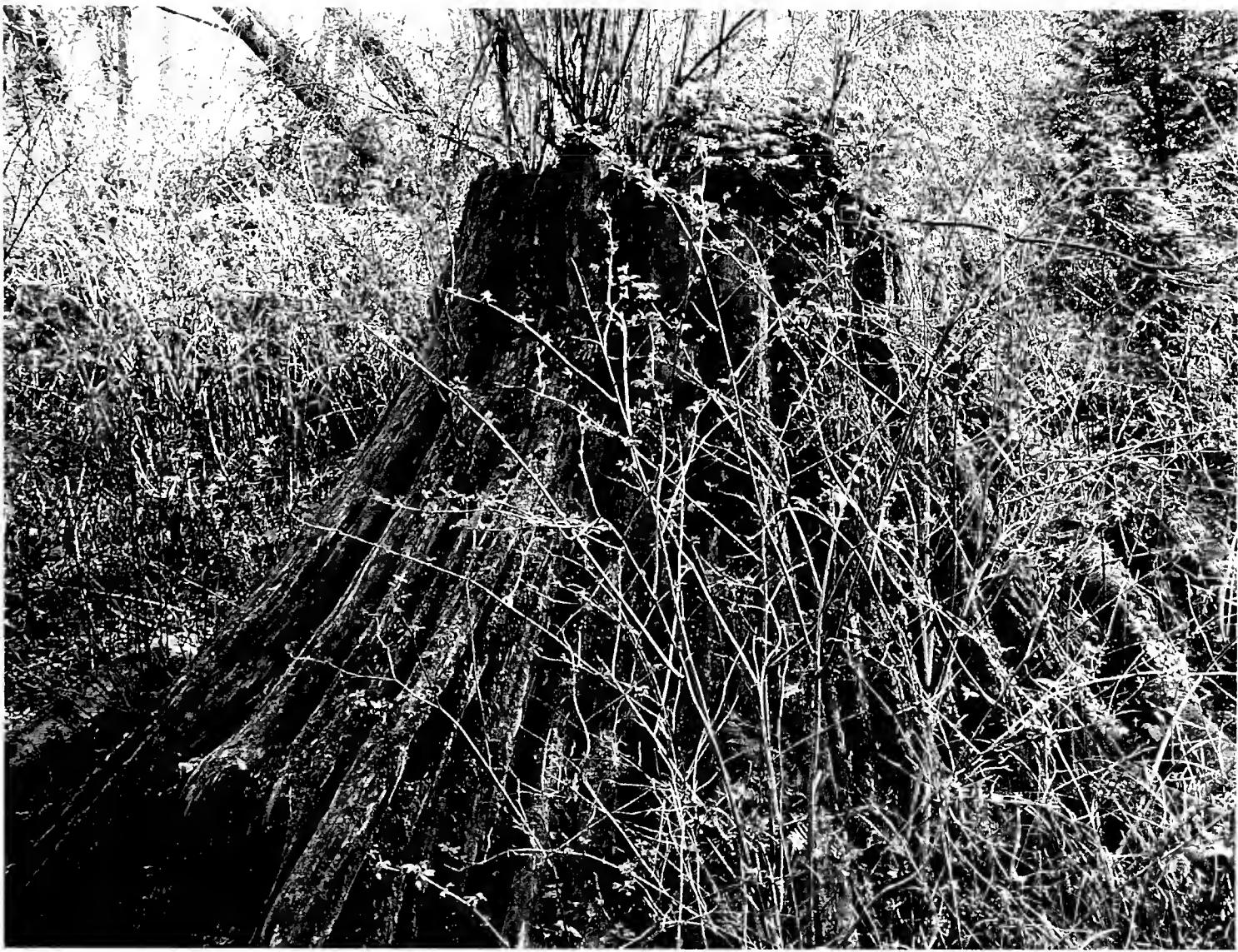
from Asian species need good garden soil and water. We have found some that struggle along with less perfect conditions, but they will flourish with the extra moisture and nutrition.

Several forms make great ground covers, becoming impenetrable mats, almost eliminating weeds. Many more become slowly increasing clumps. *Epimedium* foliage can also be quite interesting, especially on the Asian species. Some species and selections have colorful new growth that is more spectacular than the flowers. There are both evergreen and deciduous epimedums.

Deciduous types can be cut back once they begin to change color in autumn. Evergreen types should be cut back in late January or early February. If cutting the foliage back is delayed, the flower stalks sprout, and it is impossible to remove the winter-weary leaves without sacrificing the flowers. ~

RICHIE STEFFEN is Coordinator of Horticulture for the Elisabeth C. Miller Botanical Garden and a member of the Bulletin's editorial board.

Epimedium semperflorens 'Rose Dwarf' was introduced to Northwest gardeners by renowned plantsman George Schenck. This fine selection offers green leaves, flushed with purple, and rosy-purple, profusely blooming flowers on a low, compact plant.



The Flora of Seattle in 1850

PART II

BY RAY LARSON



*W*hat did Seattle look like before the first European-Americans began settling here in 1851? The first part of this two-part essay (Arboretum Bulletin, Fall 2006) described the historical landscape now occupied by the University of Washington Campus, Washington Park Arboretum and the surrounding vicinity. Part II will provide a

TOP: This stump is from a *Thuja plicata* (Western red cedar) that was already very old in 1850. You can see this stump (eight feet in diameter) when walking along Piper's Creek in Seattle's Carkeek Park. Trees of this size were not unusual in Seattle in 1850. **LEFT:** A modern-day view of the shoreline near the West Point lighthouse in Discovery Park. Flat, windswept areas such as Alki Point, West Point and Golden Gardens supported a distinct plant community and had a prairie-like appearance.

glimpse of a few of the more intriguing landscapes that once covered the rest of what is now Seattle.

1850: An Emerald Landscape

The Seattle of 1850 would scarcely be recognizable to most of us living here today. While Seattle rightly deserves its present-day moniker “the Emerald City”—as it appears verdant and green compared to many other modern cities of the same size—it would seem starkly barren and gray compared to the scene 150 years ago. This isn’t surprising, for any city will change the landscape it occupies in the course of its development. But other than a few parks that hug Seattle’s shorelines and greenbelts that cling to steeper grades, there is little to suggest the overwhelming green that greeted the first members of the Arthur Denny Party in November 1851. And not just the amount of “green” has changed. Even the hills and valleys that are so characteristic of Seattle have been altered to one degree or another—many having been smoothed or graded for easier access, and some leveled, filled, or removed all together. All cities alter the landscape on which they sit, but perhaps no others have done as much in so short a time as has Seattle.

The varied topography of Seattle and its location on an isthmus of land between Puget Sound and Lake Washington gave rise to many different plant habitats. In addition to the plentiful hills, some reaching 500 feet above sea level, there were valleys filled with springs, streams, bogs and marshes. Shorelines were often bordered by steep, forested bluffs; others were low, flat and open. A few were described as prairie-like and supported distinct plant communities far different from almost anything else nearby. Even the forests that once covered most of the city varied dramatically over short distances—the result of past disturbances such as fire, wind or Native American settlement. To appreciate these varied locations and the plants they supported in more detail, we must travel back 150 years into the past. Although

each location can be visited today, all have lost most of their former landscape character and plant life.

Downtown Seattle

Ironically, we know the most about the pre-urban landscape of the place that has changed most in the last 150 years—downtown Seattle. Although the Denny Party settled briefly near Alki Point in West Seattle in 1851, they quickly realized that, if they were going to establish a long-term settlement of any size, another site would have to be found. They also soon learned that cutting timber was the best option they had for establishing profitable and sustainable trade. Alki provided little easily accessible timber of any size, and its shallow waters made loading ships difficult. After spending much of 1852 scouting the central Sound for a better location, most of the settlers moved to the eastern shore of Elliott Bay by the end of that year. The land there was thickly timbered, and the sheltered bay featured deep waters close to shore. The city slowly grew from this new center, and these first settlers became established and prosperous in time. A number of first-hand accounts describe what it took to make a living off the land in this part of the city. These include detailed letters from the 1850s and journals, articles and books from later decades. Photographs from as far back as 1859 also help set the scene. As a result, the historical landscape of downtown Seattle is the most completely described of any in the city.

Early Records of Downtown Flora: Both Challenge and Beauty

The character of this land varied considerably. There was a salt marsh just east of what is now Pioneer Square, and to the north, the land rose gradually, but with ravines, springs and boggy ponds punctuating the forest. The trees were huge in some areas, and many early settlers told of the difficulty of clearing land for homes and gardens. In the spring of 1853, Catherine Blaine, wife of



the city's first minister, wrote to her family in New York State that, "In order to get a place to put our house we had to clear off land more thickly wooded than any of which you ever dreamed." She added that, "Making gardens here is a different thing from what it is with you...here are stumps, roots, bushes and plenty of such things to be cleared away...[with] fires burning for two weeks in the yard to burn up the stuff."

In 1902, Father F.X. Prefontaine recalled the difficulty of clearing a block of land for a church near Third Avenue and Washington Street in 1868: "Every foot of it was covered with monster firs and dense underbrush. One giant of the forest that we cut down, I remember, measured eight feet in diameter at the butt and had roots which extended from one side of the block to the other and which on the south drank in the waters of a little creek that ran down the ravine, on the north side of which

the church was to stand. We were three months in getting rid of the stumps and underbrush that remained after the trees were felled."

Emily Inez Denny, one of the daughters of the original Denny family, described her childhood walks along the "high banks, then not demolished by grades" that once bordered the waterfront. She and her friends "clambered up and down the steep places gathering armfuls of lilies (trillium) [*Trillium ovatum*], red currant (*Ribes sanguineum*) [*Ribes sanguineum*], Indian arrow-wood (spirea) [*Holodiscus discolor*], snowy syringa (philadelphus) [*Philadelphus lewisii*] . . . and the yellow blossoms of the Oregon grape (berberis glumacea and aquifolium) [*Mahonia nervosa* and *M. aquifolium*], which we munched with satisfaction for the soursweet, and the scarlet honeysuckle [*Lonicera ciliosa* or *L. hispida?*]." Another Denny descendant, Sophie Frye Bass, described Pike Street as being "overgrown

Ronald Bog, c. 1920-30. Though this picture is of a bog that was just north of the present-day city limits of Seattle, many of the bogs in Seattle resembled this scene in 1850.

with wild currant, trilliums and violets" and Pine Street, near today's Westlake Center, being a boggy place where "purple violets and other swamp things grew . . . besides skunk cabbage [*Lysichiton americanus*] and the villainous devil's club [*Oplopanax horridus*]." These are but a few of the references that were recorded, many of quite specific localities.

Boggy Habitats

Among the most interesting of Seattle's historical landscapes were several large bog systems, all of which have since been filled or drained. One such place existed between what is now the parking lot south of the Northgate Shopping Mall and the campus of North Seattle Community College. Then, as now, this location contained the headwaters of the south fork of Thornton Creek. In 1855, Government Land Office (GLO) surveyors mapping this area described it as a "cranberry marsh." A remnant of this marsh survived until the 1950s, when the surrounding land was

developed into the mall and commercial properties. Many herbarium specimens of *Vaccinium oxyccocos* (wild cranberry) were collected from this and similar habitats in Seattle through the early 1900s.

Other sizable bogs existed at Sand Point (Mud Lake), the present-day site of Dahl Playfield and the Picardo Farm P-Patch in north Seattle (Ravenna Bog), and the recently re-excavated bog at Roxhill Park in southern West Seattle. University of Washington professors George Rigg and Göte Turesson described Seattle bog vegetation in great detail in several scientific papers published in the 1910s and 1920s. Besides a variety of *Sphagnum* species, these habitats supported extensive stands of showier plants such as *Rhododendron groenlandicum* (Labrador tea) and *Kalmia polifolia* (bog laurel). These bogs also contained the only local specimens of *Populus tremuloides* (quaking aspen) and the now locally extinct *Trientalis europaea* ssp. *arctica* (northern starflower), last noted in 1927.

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And Seattle Prairies

Seattle also once supported several prairie-like habitats. The best documented of these, in terms of recorded vegetation, was the low and windswept area around Alki Point. Interestingly, this landscape was also the first area of Seattle to be described by European-Americans. In 1833, Dr. William Fraser Tolmie of Great Britain's Hudson Bay Company was scouting Puget Sound for a place to set up an agricultural outpost and trading site. He briefly considered Alki Point, noting in his journal that the area "was about one mile in length and from 100 to 150 yards in width, and raised about 30 feet above sea level, toward which it presented a steep clay bank. The surface was flat and dotted with small pines, and the soil was mostly sand. A fort well garrisoned would answer well as a trading post on the prairie where we stood." In addition to Tolmie's account, we know that the native Lushootseed word for the point was *sbaq"abqs* or "prairie point."

The University of Washington Territorial University Herbarium contains many specimens collected around Alki Point that are typical of prairie-like habitats elsewhere in the region. Two species of *Castilleja* were collected there, *Castilleja levisecta* and *C. attenuata*, both of which are now extinct in Seattle. *Allium acuminatum* (Hooker's onion) and *Brodiaea coronaria* (harvest lily), both prized by indigenous peoples, were also collected at Alki Point. It is likely that *Camassia* spp. (camas) and *Zigadenus venenosus* (death camas) once grew there, as they were collected and preserved as herbarium specimens just a few miles south along the shore. Similar seaside prairie-like areas once existed along the shore at West Point and at Golden Gardens Park.

Along the Duwamish, Boeing Field now sits on an extensive, historic prairie-like system. A great bend in the Duwamish River—once a much larger river system draining the White, Black, Green and Cedar rivers—flowed around



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a low-lying meadow, dozens of acres in size. It is no accident that the first European-American settlers of the Duwamish valley chose this area for their 320-acre donation claims in 1851. The land was already largely free of trees and was next to a recently abandoned site of a native village, many centuries old. In the late 1870s a portion of this productive land was selected as the site of a 160-acre county poor farm. Even then, after 25 years of farming by European-American settlers, the soil was littered with the broken shells deposited over a millennium of Native American habitation. How exactly this area had been kept open and clear of trees before 1851 is unknown. It may have been caused by clearing or controlled burning by the native population, seasonal flooding of the Duwamish (though densely wooded sites throughout the valley also flooded annually), soil conditions or a combination of factors. In any case, this land was producing enormous crops of food as early as 1853, less than two years after European-American settlement. This productivity simply would not have been possible if the land had not already been devoid of trees in late 1851.

Seattle's Garry Oaks

Another intriguing prairie-like site extended from just west of Seward Park south along the shore of Lake Washington toward Pritchard Beach. This area once contained a sizable population of *Quercus garryana* (Garry oak), and may have historically supported an open, savannah-like landscape. Garry oaks are the only oak native to Washington and are only locally common in prairies around Ft. Lewis, south of Tacoma, and scattered areas along the north Sound and into the San Juan Islands. GLO surveyors mapping this area of Seattle in 1861 noted that oak was the third most prevalent tree over portions of this landscape, after fir and cedar. Several large Garry oaks persist in the neighborhood west of Seward Park, and the south end of the park contains many mature specimens.

In Martha Washington Park, about half a mile south of Seward Park, is another grove of over a dozen Garry oaks. Former Arboretum Curator Joseph Witt, writing in the Spring 1979 issue of the Bulletin, estimated that the largest tree in the park at that time had likely been growing there since the 1790s. Unfortunately, that tree fell during the winter of 1987-88. As Garry oaks are exceedingly slow-growing, and trees that are centuries old may only be two feet or less in diameter, some of the *Quercus garryana* specimens now growing in the surrounding area could date back to at least 1850. Even more interesting: Garry oaks generally are only found in areas where natural prairies once occurred. Given that similar dry- or open-site plants were collected nearby, including *Ceanothus velutinus* (sticky laurel) and *Fragaria vesca* var. *crinita* (woodland or prairie strawberry), it is possible that a prairie-like area once existed there. Whether these sites were in fact remnants of an historical oak savannah or prairie-like habitat is an intriguing question, and more research is needed. It is possible that these areas were maintained as open prairies by native populations prior to 1850—although these populations had already been severely diminished by disease epidemics earlier in the 19th century. There are some things about Seattle's native flora that we just may never know. ☺

RAY LARSON is head gardener at Hill-Crest, the residence of the University of Washington president. Readers interested in a more detailed exploration of this article's topic may peruse Ray's master's thesis, "The Flora of Seattle in 1850: Major Species and Landscapes Prior to Urban Development," available at both the Elisabeth C. Miller Library at the University of Washington Botanic Gardens and at the Natural Sciences Library on the central UW campus. Readers with stories to share regarding the flora of Seattle prior to urbanization may reach Larson at halcyon@u.washington.edu or in care of this publication.



Cascadia

BY DANIEL J. HINKLEY

*"On stepping on the shore *Gaulthera* shallon* was the first plant I took in my hands. So pleased was I that I could scarcely see anything but it. Mr. Menzies correctly observes that it grows under thick pine-forests in great luxuriance and would make a valuable addition to our gardens. . . . In a few hours we returned to the ship amply gratified."*

From the Journal of David Douglas, Saturday, 9 April 1825

There was once a time, a few of you might recall, that going to the theater to see the newest movie was not bound by the constraints of something so mundane as its start time. "This is where we came in," despite its stature as classical cliché, was the catch phrase understood: stand up, grab the coat and leave.

As anachronistic as the comparison might seem, I cannot help but think of those words

when hiking through the lowland flora of Puget Sound. As staggeringly green and large as our native bounty is, the temptation may be to assume, after a relatively short period of time, that one has seen it all, and that one might just as well grab the coat and leave.

It is perhaps for this reason that the concept of a "Cascadia" exhibit in Washington Park Arboretum's Pacific Connections Garden undertaking has been met with—if not necessarily

The "hanging bogs" of southern Oregon—where water continually seeps, and the seepage has created a high-altitude wetland habitat—are a unique and signature landscape of the Siskiyou Mountain Range. *Darlingtonia californica*, the West Coast's native pitcher plant, is yet another example of the endemic flora—spared from glaciation by this east/west line of mountains—that is found here and nowhere else.

skepticism, then at least appropriate—cross-examination. With such a depauperate lowland flora, which is already showcased, by default, in other preserved spaces in Seattle, why devote additional space for its interpretation in the implementation of the new Master Plan?

An adequate answer comes by way of three distinctive avenues. First, Pacific Connections' Cascadia would call attention to selected forms of native plants we are already familiar with, i.e., cultivars of those plants in our own backyard. A second road leads us higher in elevation to the subset of flora which many of us do not find the time or ability to visit, and the third avenue takes us to the austral fringes of what is considered by botanists to encompass the somewhat subjective geographical boundaries of Cascadia in southern Oregon and Northern California.

The site earmarked for the Cascadia exhibit already plays host to a mature stand of one of most recognized native tree species, the Pacific madrona, *Arbutus menziesii*. These trees, with other naturally occurring shrubs and groundcovers, will provide a ready-made context in which to reveal to the visitor and student the little-comprehended affluence of our native flora.

Selected Forms of our Native Plants

Although not as common as they deserve to be in our horticultural industry, there are numerous cultivars of our local flora that are more valued in the gardens of Europe than in our own. *Ribes sanguineum* or red-flowering currant is a good example. First collected in 1793 by Archibald Menzies—who was sailing with Captain George Vancouver—this flowering currant's introduction into British commerce, in 1817 by David Douglas, was met with substantial enthusiasm. Over the years, numerous named variants, garnered from nature as well as garden cultivation, have been selected. Named cultivars, with flowers from pure white to vibrant red, as well as golden, variegated foliage, deserve a site for side-by-side comparison.

Our evergreen huckleberry, *Vaccinium ovatum*, is more varied than most gardeners realize in regard to fruit size, color and fecundity. Cascadia will be an ideal opportunity to interpret this variability. A dwarf form of salal, *Gaultheria shallon* 'Snoqualmie Pass,' has never become as popular as it deserves to be, nor have the variegated forms of *Paxistima myrsinoides* that are currently found only in collectors' gardens. Selected forms of *Rhododendron macrophyllum* might also be collected and displayed.

Dwarf and prostrate forms of our lowland hemlock, *Tsuga heterophylla*, exist, as well as too-little-known, blue-foliaged forms of our native yew, *Taxus brevifolia*. Two named forms of the big-leaf, or Oregon, maple, although already found in the Arboretum, are certainly in need of renewal and might lend themselves to Cascadia's overstory. *Acer macrophyllum* 'Kimballiae' is a low, rounded form with deeply incised leaves, while 'Seattle Sentinel' is a fastigiate form that more closely resembles a Lombardy poplar.

More diminutive, *Acer circinatum*, vine maple, possesses cut-leaf, golden-foliaged and dwarf cultivars that are too infrequently encountered in our gardens. Even our signature Douglas fir, *Pseudotsuga menziesii*, encompasses an expansive number of unusual forms, including those possessing variegated leaves and dwarf, fastigate and weeping growth habits.

Wish to Get High?

Although our lowland flora might seem a bit repetitive, the mix changes precipitously and dramatically as one ascends elevation in both the Cascade and Olympic Mountain ranges. Although the mountain hemlock, *Tsuga mertensiana*, and sub-alpine fir, *Abies lasiocarpa*, are often encountered in our home landscapes as well as in the Arboretum's collection, plants requiring more precise horticultural practices often remain unknown to those unable to pay in situ homage to these botan-

ical curiosities. The Cascadia exhibit provides an opportunity to capitalize upon the talented staff of horticulturists at Washington Park Arboretum and to cultivate those plants requiring a bit of coddling, including the rarely seen flannel bush, *Cladothamnus pyroliflorus*, and *Rhododendron albiflorum*, which might ultimately find suitable homes in this exhibit and help provide interpretive as well as educational opportunities.

Lassoing the Klamath Knot

Anyone who has traveled south on Interstate 5 towards San Francisco—even if not remotely cognizant of the rapidly changing plant speciation mile-by-mile—cannot help but comprehend how quickly the landscape begins to transfigure. By mid-Oregon, the mix of woody plant species is all but unidentifiable to those who have never traveled beyond the greater Puget Sound basin. Two celebrated conifers, *Calocedrus decurrens* and *Chamaecyparis lawsoniana*, begin to appear, as does the California bay, *Umbellularia californica*, whose leaves are used in cooking. These species continue south towards the botanically resplendent Siskiyou Range on the border between Oregon and California, where, due to climatic and geologic parameters, they meet an exciting inventory of rare and endemic plant species.

It is here that *Rhododendron occidentale* thrives, offering early- to mid-summer flowers with a heady fragrance. The Garry oak, *Quercus garryana*, and *Q. kelloggii* meet up with several evergreen brethren, all worthy of integration into an ecogeographical vignette of Northwest flora. *Lithocarpus densiflorus*, the tan-bark oak, joins rank with the low, rounded mounds of the Sadler's oak, *Quercus sadleriana*, as well as the hugely variable, small-foliaged huckleberry oak, *Quercus vacciniifolia*. Of special note is the golden chinquapin, *Chrysolepis chrysophylla*, with deep, glossy green foliage, under-surfaced by a rich, chartreuse-yellow farina.

Certainly, a place of honor will be found for the endemic evergreen shrub, discovered in the Siskiyous by Lilla Leach in 1930: In the Ericaceae family, *Kalmiopsis leachiana* forms a low mound of glossy evergreen foliage three feet tall by five feet wide and is coated with comely pink flowers in spring. Adjacent, I would lobby hard for inclusion of the newly discovered *Neviusia cliftonii*, an extremely rare deciduous shrub found in Northern California in the late 1990s.

These plants might flank a grouping of what is arguably the most graceful of conifers, Brewer's weeping spruce. *Picea breweriana* is found naturally occurring only in the Siskiyou Mountains, and although currently represented in the collection at the Arboretum, a small, well-cultivated grove of this plant would be a fitting tribute to a small, rarified piece of West Coast real estate that continues to generate devotees across the globe.

These suggestions are, of course, only a fraction of the possibilities that exist in recreating a macro-glimpse of the Pacific Northwest. As in all plant collections, new and exciting accessions may replace those with less appeal, less interpretive value or more difficulty in cultivation. What will not change along the way is the increased appreciation of a more abundant and compelling natural inventory of regional plants than was ever before realized. ☙

Garden designer and writer, as well as plant hunter, **DAN HINKLEY** travels the world in search of seed and the excitement of finding new garden-worthy plants. To read more about the Arboretum's new Pacific Connections Garden, see David Mabberley's article in the Fall 2006 issue of the Bulletin.

*“*Gaulthera*” is the spelling Douglas used for the genus *Gaultheria*. David Douglas wrote this comment in his journal when visiting the area north of the mouth of the Columbia River. (Taken from “Douglas of the Forests: The North American Journals of David Douglas,” by John Davies. Seattle, University of Washington Press, 1980, page 37.)

PACIFIC CONNECTIONS:

Cascadia in the Miller Library

BY BRIAN R. THOMPSON

The rhododendron landscapes in our modern gardens were first inspired by the sight of rhododendrons growing in the wild." So begins Mt. Vernon, Washington, author Sonja Nelson in "Rhododendrons in the Landscape," a book that brings both historical perspective and practical design advice to the use of these iconic plants in Pacific Northwest gardens.

Robert Henderson dedicates "Neighborhood Forager" to Euell Gibbons, "... who invented the genre that sustains me, literally and figuratively." This handbook for living from nature is based on the author's considerable experience harvesting and using the native and naturalized plants near his home in Rosedale, British Columbia.

"Fall is tough on the vocabulary of a garden writer. I don't think I have another riotous, spectacular, or gorgeous left...." But Ketzel Levine does find her unique voice in "Plant This!," an often wacky but insightful review of favorites from her Portland garden.

What do these three disparate titles have in common? All can be found on the shelves of the Pacific Northwest Connections section at the Elisabeth C. Miller Library. Authors, famous and obscure, writing about the plants, gardens, ecology, habitats and nature of the region, rub their collective book spines here.

This organizational approach is drawn from the Pacific Connections gardens planned for Washington Park Arboretum. The Miller Library has planted its own Cascadia garden, focusing on regional authors writing about regional subjects they know best.



"Wetland Plants of Oregon & Washington" is a smart little guide and, with its water-resistant cover and handy size, is perfect for taking into the field. Author B. Jennifer Guard's use of photographs, line drawings, plant and habitat descriptions, keys and notes, makes this a most effective book for plant identification.

A who's who of experts collaborated on "Wild Lilies, Irises, and Grasses: Gardening with California Monocots." You ask, is nothing safe from invading Californians? Perhaps not, but many of these showy plants have already taken up Pacific Northwest residency. The Library's collection includes this title and others from "The Golden State" with relevance for our part of the coast.

Our boundaries also extend north, where Des Kennedy shares from the heart in "This Rambling Affair: A Year in a Country Garden," set on Denman Island in British Columbia. He knows his audience: "Gardeners are like people who endlessly take self-help courses and seminars to try make things better. We are chronic improvers, not necessarily of ourselves, but certainly of our landscapes...."

Pacific Connections extends beyond Cascadia, recreating floras that ring the Pacific.. The Miller Library collection, too, embraces books and gardening traditions from temperate areas of the Pacific Rim. All of the proposed gardens, representing Chile, New Zealand, Australia and China, are well represented in the Pacific Northwest Connections part of the Miller Library. Books on the gardens and plants of Japan—in honor of the Japanese Garden—are found here, too.

"Going Native: Making Use of New Zealand Plants" combines the expertise of several Kiwi botanists, ecologists and horticulturists. Aimed at a New Zealand audience, it is well worth reading by Cascadia gardeners, especially the more daring among us.

"From the first the Japanese garden—whether in Kyoto or Kansas City—has stood as a tangible antithesis to Western values." Working from that premise, Kendall H. Brown profiles "Japanese-Style Gardens of the Pacific West Coast," including our own. The 20 gardens—all open to the public—are enticingly presented by Melba Levick's photographs.

For an immersion course in Chinese gardens, look to native landscape architect and historian Chen Lifang and "The Garden Art of China." Expertly translated by botanist Yu Sianglin, this volume is filled with plans, sketches, design principles and many, many examples. It is one of the richest introductions to any art form imaginable.

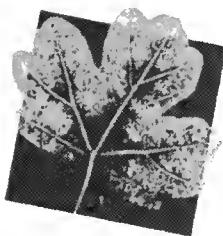
Pacific Connections will acquaint Arboretum visitors with plants to consider for their own Northwest gardens. The local horticultural buzz also identifies the northern Mediterranean and southern Africa as significant sources of cool plants for our region. In recognition of this interest, the Library also includes books on the plants and gardening traditions of these areas in the Pacific Northwest Connections section.

So come research "The Garden Lover's Guide to Italy" by Penelope Hobhouse before your next trip to southern Europe. If your ticket says South Africa, then Brian Rycroft's classic "Kirstenbosch" (with photos by Ray Ryan) will ensure that you include this national treasure on your itinerary.

The Miller Library's collection contains many important tools for researchers. Multi-volume Floras—those comprehensive listings of the plants of a region, with detailed descriptions and keys for identification—are among those valuable tools. Typically published over a period of many years, the Floras of North

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America, China, Japan, Australia, Chile, southern Africa and the Iberian Peninsula (Spain and Portugal) are currently being collected by the Library. Already complete are the Floras of New Zealand and Turkey.

How do I find the Pacific Northwest Connections section? We make it easy for you: It's the focal point of the Library's new reading room! Four rows of low shelves—handy for spreading out books on top—are located just past the information/reference desk. Each book spine in the collection is distinguished by a bright green (this is the Pacific Northwest!) stripe.

Don't miss the historical gems housed here, including John A. and Carol L. Grant's "Garden Design Illustrated." This husband and wife team is better known for "Trees and Shrubs for Pacific Northwest Gardens," first published in 1948 with help from the Arboretum Foundation. But their 1954 design book is perhaps more relevant today, teaching time-honored basics that have not become outdated.

If you are a "foodie" as well as a gardener, you'll love "The Northwest Herb Lover's Handbook" by Mary Preus. The former owner

of the Silver Bay Herb Farm in Bremerton, Washington, has compiled her culture techniques based on 20 years of commercial experience. She includes garden designs, an unusual listing of Northwest native herbs, recipes and much more.

Can I borrow this book (or any others)? Absolutely! All the books named in this article, with the exception of the Floras, are available to take home for three weeks (limit of three at a time). A red stripe on the spine (in addition to the green stripe) lets you know the book is good to go. Bring picture ID, fill out a simple form and you are set.

Cascadia in the Washington Park Arboretum will no doubt be a major draw for future visitors. But you do not have to wait: Cascadia is already here at the Miller Library. Come and check it out! ~

BRIAN R. THOMPSON is curator of horticultural literature at the Elisabeth C. Miller Library of the University of Washington Botanic Gardens.

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Britt Smith & Frank Mossman

Continued from page 15

and seemingly to everything except mildew and green worms.

"Towards the southern end of this area where most of the exploration was concentrated is Patrick's Point and Big Lagoon, California." [AUTHORS' NOTE: This is an area now referred to as the Stagecoach Hill Azalea Reserve, approximately 20 miles north of Eureka and renowned for exceptional selections, including a frilly flowered form named *Rhododendron occidentale* 'Stage Coach Frills.]

Widely Spread Native Populations, Not Widely Available to Gardeners

Although Smith and Mossman concentrated their collecting efforts in southwestern Oregon and northwestern California, the native range of *Rhododendron occidentale* actually extends much further south. Wild populations can be found from the Siskiyou Mountains in southern Oregon into the Sierra Nevada Mountains of eastern California as well as along the coast to just south of San Francisco. South of San Francisco populations become more localized and appear sporadically along the Sierra Nevada Mountains, with the southernmost known plants found in Cleveland National Park (Palomar Mountains) just north and east of San Diego. These southern populations have led to speculation that *R. occidentale* may be the only rhododendron to occur in Mexico. Only further studies in the mountains of Baja California, Mexico, could confirm these suspicions. It is a plant of open areas and, as trees move in, the azaleas will, over time, be shaded out. This need for open habitats has led to the adaptation of growing on barren and toxic serpentine soils. In the Siskiyou Mountains *R. occidentale* can often be found along streams and moist areas growing in the company of *Darlingtonia californica* and *Cypripedium californicum*.

Unfortunately, most of these remarkable plants are not readily available. The western azalea can be quite difficult to root, and seedlings vary greatly from the parent plant. Occasionally, some Smith-Mossman selections can be found at rhododendron specialist nurseries, but patience and persistence is the key to finding the best forms. Due to propagation difficulties, the Smith-Mossman plants are not commonly available for purchase. Until recently, there was no central collection of all Smith-Mossman selections, and eager gardeners were just lucky to be at the right place at the right time to acquire one of these wonderful plants.

The precarious nature of the collection recently almost led to its loss. In 1997 the Smiths decided to sell their Kent, Washington, home and move to a smaller, more manageable property. Their Kent home was to be subdivided and developed, with the almost certain loss of most of the azaleas Brit Smith had collected. Fortunately, a last-minute deal was struck with the new buyer and developer, allowing Britt Smith's collection to be moved to the Lake Wilderness Arboretum in Maple Valley, Washington. In June 2000 the new azalea site, with over 200 selections represented, was dedicated as the Smith-Mossman Western Azalea Garden. Just recently Frank Mossman also donated part of his collection to the Lake Wilderness Arboretum, adding many more selections to the largest collection of *Rhododendron occidentale* in the world.~

RICHIE STEFFEN is coordinator of horticulture for the Elisabeth C. Miller Botanical Garden and is a member of the Bulletin's editorial board. **RICK PETERSON** is co-executive director and garden manager of the Rhododendron Species Botanical Garden, where he has worked for 22 years.



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